

What is claimed is:

Sub B1

5 1. A cushioning conversion machine comprising a conversion assembly which converts sheet stock material into a three-dimensional cushioning product and a stock supply assembly for supplying stock material to the conversion assembly, the stock supply assembly being operative to advance the stock material to the conversion assembly at a substantially constant supply rate.

10 2. A cushioning conversion machine as set forth in claim 1, wherein the stock supply assembly includes a stock roll holder assembly for supporting a roll of the sheet stock material, the stock roll holder assembly including one or more rotatable roll support members that extend transverse to the path of the stock material and engage an outer periphery of the stock roll for advancing the stock material therefrom.

15 3. A cushioning conversion machine as set forth in claim 2, wherein the roll support members comprise respective driving rollers that extend substantially the full width of the stock roll.

20 4. A cushioning conversion machine as set forth in claim 2, wherein the stock roll holder assembly includes a motion transmitting assembly for driving the one or more rotatable roll support members at a substantially constant rate thereby feeding the stock material at a substantially constant rate.

25 5. A cushioning conversion machine as set forth in claim 2, wherein the stock roll holder assembly includes a pair of stock roll guide members for holding the stock roll on the rotatable roll support members.

30 6. A cushioning conversion machine as set forth in claim 5, wherein the roll support members are rotatably mounted to the guide members.

7. A cushioning conversion machine as set forth in claim 5, wherein the stock roll is guided by the stock roll guide members via gravity feed.

8. A cushioning conversion machine as set forth in claim 5, wherein 5 the stock roll guide members comprise end plates disposed adjacent to the respective side edge portions of the stock roll.

9. A cushioning conversion machine as set forth in claim 5, wherein 10 the stock roll guide members comprise a pair of respective guideways for slidably receiving therein stock roll end guides coaxial with and projecting from the ends of the stock roll.

10. A cushioning conversion machine as set forth in claim 9, wherein 15 the guideways comprise a pair of slots defining a guide path for the stock roll end guides.

11. A cushioning conversion machine as set forth in claim 1, wherein 20 the conversion assembly includes a feed motor which feeds the stock material through the conversion assembly at a first rate and the stock supply assembly includes a supply motor for driving the stock roll holder for supplying the stock material at a second rate.

12. A cushioning conversion machine as set forth in claim 11, wherein 25 the second rate is faster than the first rate so as to form a loop in the stock material as the stock material travels from the stock supply assembly to the conversion assembly.

13. A cushioning conversion machine as set forth in claim 12, wherein 30 the stock supply assembly further includes a sensor for detecting a size of the loop and a controller for controlling the first and second rates of the motors in response to said detection for maintaining a prescribed loop size.

14. A cushioning conversion machine comprising a conversion assembly which converts sheet stock material into a three-dimensional cushioning product, the conversion assembly including a connecting assembly comprising:

5 a frame; and

first and second rotating feed members, the first of which is mounted in a carrier pivotally mounted to the frame, and said carrier being resiliently biased for urging the first rotating member carried thereby towards the second rotating member.

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15. A cushioning conversion machine as set forth in claim 14, wherein the carrier is pivotally connected to a pivot shaft and rotatably supports an idler shaft, the idler shaft carrying the first rotating feed member.

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16. A cushioning conversion machine as set forth in claim 15, further including a driving shaft rotatably mounted to the frame and having the second rotating feed member carried thereon.

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17. A cushioning conversion machine as set forth in claim 16, wherein the carrier is resiliently biased to urge the idler shaft and the first feed member carried thereon toward the driving shaft and the second feed member carried thereon so as to apply a pinch force to stock material being fed between the feed members.

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18. A cushioning conversion machine as set forth in claim 16, wherein the carrier is selectively adjustable in such a manner that the idler shaft is movable towards and away from the driving shaft for adjusting the distance between the first rotating feed member and the second rotating feed member.

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19. A cushioning conversion machine as set forth in claim 14, further including a mounting assembly movable between a locked condition whereat the carrier may pivot about the frame over a prescribed angular range, and a

released condition whereat the mounting assembly is free to pivot about the frame and carry along with it the carrier.

20. A cushioning conversion machine as set forth in claim 19, further
5 including a biasing member interposed between the carrier and mounting assembly for resiliently biasing the carrier relative to the mounting assembly thereby to urge the first rotating feed member toward the second rotating feed member.

10 21. A cushioning conversion machine as set forth in claim 20, wherein the spring member comprises a coil spring.

15 22. A cushioning conversion machine as set forth in claim 20, wherein the spring member comprises a leaf spring.

23. A cushioning conversion machine comprising a conversion assembly which converts sheet stock material into a three-dimensional strip of dunnage, the conversion assembly including a severing assembly operative to sever the continuous strip of dunnage into sections of a desired length after a 20 length of the continuous strip has passed through the conversion assembly, the severing assembly comprising:

a movable blade mounted to a coacting member having a severing edge, the movable blade being in sliding engagement with the coacting member and movable between an open position whereat a strip of dunnage may pass 25 between the movable blade and severing edge and a closed position whereat the movable blade coacts with the severing edge of the coacting member thereby to sever the strip of dunnage,

a first end of the movable blade being pivotally coupled to a motion crank for providing circular motion thereof, a second end of the movable blade having 30 a mechanism for providing a translating pivoting movement of the second end; and

a motor for rotating the motion crank which transmits circular motion to the first end and sliding motion in the second end of the movable blade, the combination of the circular motion and translating pivoting motion being operative to move the blade between its open position and its closed position.

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24. A cushioning conversion machine as set forth in claim 23, wherein the sliding mechanism comprises a pin-slot mechanism, the second end of the movable blade including a slot, the coacting member including a pin slidably received in the slot for guiding movement of the second end along the path 10 defined by the slot while permitting pivoting movement of the movable blade about the translating axis of the pin.

25. A cushioning conversion machine as set forth in claim 23, wherein the severing edge forms a side of an opening through which the strip of dunnage 15 passes.

26. A cushioning conversion machine as set forth in claim 23, wherein one revolution of the shaft moves the movable blade from the open position to the closed position and back to the open position.

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27. A cushioning conversion machine as set forth in claim 23, wherein the movable blade is substantially S-shaped, the middle portion of the S-shaped blade forming a severing edge and the end portions of the S-shaped blade forming the first and second end portions.

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28. A cushioning conversion machine as set forth in claim 23, wherein the first end of the movable blade is attached to a distal end of the motion crank.

29. A cushioning conversion machine as set forth in claim 23, wherein 30 a guide bar is mounted on the coacting member to resiliently bias the movable blade against the coacting member.

30. A cushioning conversion machine comprising a conversion assembly which converts sheet stock material into a three-dimensional continuous strip of dunnage, said machine comprising:

5 a severing assembly operative to sever the continuous strip of dunnage into sections of a desired length after a desired length of the continuous strip has passed through an outlet opening of the conversion assembly,

an exit chute disposed downstream of the severing assembly for receiving therein the severed strip of dunnage,

10 a shutter device disposed at a downstream portion of the exit chute, the shutter device including a pair of eccentric rollers disposed substantially parallel to one another thereby forming a gap between the rollers that upon rotation of the eccentric rollers varies between an open position for permitting passage therethrough of the dunnage material in one direction and a closed position that inhibits foreign objects from entering the exit chute of the machine from the 15 other direction.

31. A cushioning conversion machine as set forth in claim 30, wherein the rollers are rotatable to enlarge the gap to permit passage therethrough of a section of dunnage or to reduce the gap to inhibit foreign objects from entering 20 the exit chute.

32. A cushioning conversion machine as set forth in claim 30, wherein the eccentric rollers are driven via a motor coupled to a motion transfer assembly.

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33. A cushioning conversion machine as set forth in claim 30, wherein the motion transfer assembly comprises a flexible transfer element that is operative to rotate one of the rollers clockwise and the other of the rollers counterclockwise.

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34. A cushioning conversion machine as set forth in claim 30, wherein the shutter device includes one or more switches for detecting whether the eccentric rollers are in a position forming an open position or a closed position.

5 35. A cushioning conversion machine as set forth in claim 30, wherein the shutter device includes a detector for detecting the presence of a strip of cushioning product.

10 36. A cushioning conversion machine as set forth in claim 35, wherein the detector includes a photocell.